

The Examiner rejected claims 8 and 11 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,282,589 to Evetts et al. (hereinafter "Evetts"). The Applicant has carefully considered the Examiner's basis of rejection, but respectfully traverses the rejection. Presently pending claim 8 recites a method of operating a pulse echo ranging system. The recited limitations include transmitting at least two energy pulses having substantially different frequencies; receiving reflected echoes of the at least two energy pulses at the transducer assembly and converting the reflected echo signals to received signals; and combining the received signals to provide enhanced data. In contrast, Evetts teaches a system for correlation ranging having a transducer that emits two different frequency pulses at different times. The first pulse of Evetts has a frequency of 21.5 kilocycles per second and the second pulse has a frequency of 19.5 kilocycles per second. (Column 2, line 66 to Column 3, line 2; Column 3, ll. 25-28) As such, the energy pulses transmitted by Evetts are nearly equal in frequency. The pulses transmitted by Evetts do not have substantially different frequencies, as claimed in claim 8. Additionally, the Examiner points to multiplier 114 of Evetts to meet the limitation that the received signals are combined. However, the multiplier 114 of Evetts does not function on the received signals, which are presented at 70a and 70b in Figure 1 of Evetts. As shown by the parallel signal processing configuration in Figures 1 and 2 of Evetts, the received signals are kept separate and are subject to substantial processing including translation to the low audio frequency range (Column 5, ll. 18-31), subsequent multiplication to ultrasonic frequencies (Column 6, ll. 63-65), and other significant transformations. The output from detector 113 (or the input to multiplier 114) is "a pulse ... positioned in time with reference to the beginning of the vertical sweep voltage in proportion to the time of travel of pulses 20 and 21 from the transducer 12 to target 11 and back." (Column 7, ll. 47-50) The output of multiplier 114 is use to drive an intensity control input of a display device 10. (Column 7, ll. 55-58) As such, the multiplier 114 of Evetts does not combine the signals received by the transducer 12, but functions on other intermediate signals generated by the circuitry shown in Figure 2 of Evetts. In view of these differences, it is submitted that claim 8 is

not anticipated because Evetts fails to disclose or teach each and every feature recited in claim 8. Since claim 11 depends from claim 8, it is submitted that claim 11 is also not anticipated for the same reasons.

The Examiner rejected claim 10 under Section 103(a) as being unpatentable over Evetts taken in combination with U.S. Patent No. 4,439,845 to Geohegan, Jr. et al. (hereinafter "Geohegan"). The Applicant has carefully considered the Examiner's basis of rejection, but respectfully traverses the rejection. Presently pending claim 10 recites the feature that the received signals are differenced. The Examiner relies on difference amplifier 38 of Geohegan to meet the limitation that the received signals are differenced. The received signals of Geohegan are represented by characters 50 and 52, and Geohegan discloses that the two envelope signals 66' and 68 are provided to difference amplifier 38, where they are subtracted, resulting in a waveform 70. (Column 3, ll. 25-39 and Figures 2E-G). As such, Geohegan fails to disclose or suggest differencing the two received signals 50 and 52. In view of these differences, even if one skilled in the art were to combine the teachings of Evetts and Geohegan, the resulting method would not be the same as that recited in claim 10, and therefore claim 10 is patentable and not obvious in view of Evetts taken in combination with Geohegan.

New claims 13-16 are presented for consideration. Support for the amendments is found at page 6, ll. 12-35 of the specification, as originally filed. No new matter has been added.

New claim 13 is presented incorporating the allowable subject matter of claim 9.

New claim 14 is also presented for consideration. Claim 14 recites a method of operating a pulse echo ranging system including the step of transmitting, through the transducer assembly, a first energy pulse and a second energy pulse, where the second energy pulse has a frequency at least

twice that of the first energy pulse. New claim 14 is patentable for the same reasons argued with respect to claim 8. Neither Evetts nor Geohegan teach or suggest transmitting a first energy pulse and a second energy pulse, where the second energy pulse has a frequency at least twice that of the first energy pulse.

The fee of \$88.00 for a fourth independent claim is enclosed with our cheque.

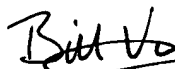
It is respectfully submitted that the present amendments and remarks herein represent a complete response to all outstanding issues and place the subject application into condition for allowance. Favorable consideration is respectfully requested.

Should there be any questions concerning this submission, the Examiner is invited to telephone the undersigned at the below-noted number to facilitate further prosecution of this application.

Respectfully Submitted,

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